



# PATENT SPECIFICATION

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Index at acceptance :—Class 43, A4.

## PROVISIONAL SPECIFICATION

### Improvements in Buckles for Straps and the like.

I, JOHN RAYMOND CUTHBERT QUILTER, of Stadium Works, Portugal Road, Woking, Surrey, a British Subject, do hereby declare the nature of this invention to be as follows :

5 This invention relates to buckles for straps and the like, and more particularly to buckles with a frictional locking action whereby the strap or the like may be quickly tightened by pulling its free end through the buckle ; in

10 such arrangements, the strap passes over a rigid portion of the frame and around a parallel bar capable of sliding in relation thereto, the tension of the strap when tightened holding the bar towards the rigid

15 frame portion, with the free end gripped between them. The sliding bar is usually knurled in order to increase its gripping power, and is guided by slots or the like at

20 the ends of the frame, the extremities of the bar being flattened to engage in these slots ; under heavy loads the bar has been found to rock and roll over like a pulley in engagement with the strap and even to burst the retaining slots in which its extremities are guided.

25 The present invention comprises an improved frictional locking buckle, particularly suitable for heavy loads in connection with parachute pack webbing, in which the sliding bar is provided with extremital shoes adapted

30 to slide along the ends of the frame, and the latter is provided with an attached guide member with which the opposite faces of the shoes make sliding contact. The shoes may be made integral with the bar, the extremities

35 being thus of T-shape, and the length of the shoes or cross bars of the T-pieces may be, for example, two or three times the diameter of the knurled middle portion of the sliding bar. The attached guide member may consist

40 of a metal shell or stamping of a channel shape corresponding to the ends and one side of a rectangular buckle frame, the ends of the guide member being of angle-section with flanges fitting upon the ends of the frame, to

45 which they are secured by rivets parallel to the axis of the sliding bar ; the other flanges

of the angle-section ends are spaced from the ends of the buckle frame, these spaces forming parallel slots in which the shoes of the sliding bar are engaged. The middle portion of the guide member may be of Z-section, the web being secured to the side of the frame by rivets perpendicular to the axis of the sliding bar ; the outwardly projecting flange of the Z-section middle portion may be slotted

50 for attachment of the buckle to a looped strap, webbing or the like, and the other flange, which is continuous with the free flange edges of the end portions, may either extend in the same plane as those edges or be

55 set at an angle of 45 degrees thereto, in which case the shoes will be correspondingly bevelled at one corner.

The buckle frame will be of open rectangular shape, the ends and one side being drilled to receive the rivets securing the guide member thereto ; the ends and this side will be rounded internally but sharp-cornered on their external faces to provide a firm seating for the guide member, and the external end

60 faces may be stepped to form shoulders fitting over the ends of the guide member riveted to these faces.

In operation, the shoes or T-shaped pieces at the extremities of the bar will slide

65 in the spaces or shoes afforded between the flat ends of the frame and the free flange edges of the end portions of the guide member, the contacting surfaces being of sufficient area to withstand wear and the length of the shoes being such that they can resist the tendency

70 of the bar to rock or roll over under the force exerted by the strap or the like passing around it.

Dated this 1st day of October, 1945.

For the Applicant,  
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## COMPLETE SPECIFICATION.

### Improvements in Buckles for Straps and the like.

85 I, JOHN RAYMOND CUTHBERT QUILTER, of Stadium Works, Portugal Road, Woking, Surrey, a British Subject, do hereby declare the nature of this invention and in what

manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to buckles for straps and the like, and more particularly to buckles with a frictional locking action whereby the strap or the like may be quickly tightened by pulling its free end through the buckle; in such arrangements, the strap passes over a rigid portion of the frame and around a parallel bar capable of sliding in relation thereto, the tension of the strap when tightened holding the bar towards the rigid frame portion, with the free end gripped between them. The sliding bar is usually knurled in order to increase its gripping power, and is guided by slots or the like at the ends of the frame, the extremities of the bar being flattened to engage in these slots: under heavy loads the bar has been found to rock and roll over like a pulley in engagement with the strap and even to burst the retaining slots in which its extremities are guided.

The present invention comprises an improved frictional locking buckle, particularly suitable for heavy loads in connection with parachute pack webbing, in which the sliding bar is provided with extremital shoes of length greater than the bar diameter, the shoes being adapted to slide along the ends of the frame, and the latter is provided with an attached guide member with which the opposite faces of the shoes make sliding contact. The shoes may be made integral with the bar, the extremities being of T-shape. The attached guide member may consist of a metal shell or stamping of a channel shape corresponding to the ends and one side of a rectangular buckle frame, the ends of the guide member being of angle-section with flanges fitting upon the ends of the frame, and other flanges spaced from the ends of the frame, these spaces forming parallel slots in which the shoes of the sliding bar are engaged. The invention is hereinafter described with reference to the accompanying drawings, in which :—

Fig. 1 is a front elevation of the improved buckle, showing in dotted lines the strap loosely engaged therewith.

Fig. 2 is an end view, in central section, showing the strap pulled tight.

Figs. 3, 4 and 5 represent the sliding bar, Fig. 4 being an end view and Fig. 5 an inverted plan of Fig. 3.

Figs. 6, 7 and 8 represent the guide member, Fig. 7 being a plan and, Fig. 8 being a section on the vertical centre line of Fig. 6.

Figs. 9, 10 and 11 represent the buckle frame, Figs. 10 and 11 being sections on the vertical and horizontal centre lines of Fig. 9.

As illustrated in Figs. 1 and 2, the buckle comprises a sliding bar 11, a guide member 12 and a frame 13, these parts being shown separately in detail in Figs. 3 to 11. A strap

14 or the like, shown in dotted lines in Fig. 1, passes in a loop around the bar 11, its tension holding the bar towards the upper side 15 of the frame with the free end 16 of the strap gripped between them, as shown in Fig. 2: the normal position of the bar 11, resting on the frame when the buckle is assembled and before fitting the strap 14 in place, is shown in dotted lines in that figure.

The sliding bar 11 is provided with extremital shoes 17, adapted to slide along the ends 18 of the frame; these shoes are integral with the bar, the extremities being thus of T-shape, as seen in Fig. 3, and the length of the shoes (or cross-bars of the T-pieces) may be, for example, two or three times the diameter of the knurled middle portion of the bar. Preferably the shoes 17 are slightly offset from the axis of the bar, as shown in Figs. 4 and 5; the purpose of the offset is to maintain the bar partly within the opening of the frame 13, so as to overlap the upper and lower sides of the frame at the respective ends of its movement, thus preventing it from falling out of position before the strap is inserted. The shoes may also be bevelled at 45° at one corner 19, as shown in Fig. 5, to match a corresponding bevel in the guide member, as mentioned below.

The guide member 12 consists of a metal shell or stamping of a channel shape, as seen in Fig. 6, corresponding to the ends 18 and one side of a rectangular buckle frame; the ends of the guide member are of angle section, as seen in Fig. 7, with flanges 20 fitting upon the ends 18 of the frame, to which they are secured by rivets 21 parallel to the axis of the bar 11. The other flanges 22 of the guide ends are spaced from the frame ends 18, these spaces forming parallel slots 23, as seen in Fig. 2, in which the shoes 17 of the sliding bar are engaged. The middle portion 24 of the guide member may be of Z-section, with parallel or inclined flanges, the web 25 being secured to the lower side 26 of the frame by rivets 27 perpendicular to the axis of the sliding bar; the outwardly projecting flange 28 is slotted at 29 for attachment of the buckle to a support, such as a looped strap, webbing or the like. The other flange 30, which is continuous with the free flanges 22 of the end portions, may either extend in the same plane as those flanges or be set at a bevel angle of 45 degrees thereto, as shown, corresponding to the bevelling of the shoes 17, as mentioned above; the bevelling of these parts provides a more convenient shape of the buckle adjacent to its slotted connection 29.

The buckle frame 13 is shown in Fig. 9 as being of open rectangular shape, the ends 18 and one side 26 being drilled and countersunk at 31 to receive the rivets 21, 27 securing the guide member 12 thereto; the ends 18 and sides 13, 26 will be rounded internally, 130

as seen in Figs. 10 and 11, but the ends and the side 26 are sharp-cornered on their external faces to provide a firm seating for the guide member 12, and the external end faces may be stepped to form shoulders 32 fitting over the ends of the guide member flanges 20 riveted to these faces.

In operation, the shoes or T-shaped pieces 17 at the extremities of the bar 11 will slide in the spaces or slots 23 afforded between the flat ends 18 of the frame 13 and the free flange edges 22 of the end portions of the guide member 12, the contacting surfaces being of sufficient area to withstand wear and the length of the shoes 17 being such that they can resist the tendency of the bar 11 to rock or roll over under the force exerted by the strap 14 or the like passing around it.

The slotted attachment 29 may be dispensed with in cases where the buckle is employed for adjustment of a leg strap or the like, in which case the upper side 15 of the frame may be engaged by a looped portion of a connector strap or the like, the adjustable leg strap or the like being looped around the sliding bar 11 in a direction to pull down against the opposite side 26 of the frame, this leg strap extending out of the frame at the face remote from the guide member 12 and the pull upon the leg strap tending to draw the shoes 17 down the slots 23, instead of up the slots as in the construction illustrated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A frictional locking buckle, in which the sliding bar is provided with extremital shoes of length greater than the bar diameter, the shoes being adapted to slide along the ends of the frame, and the latter is provided with an attached guide member with which the opposite faces of the shoes make sliding contact.

2. A buckle according to claim 1, in which the shoes are integral with the bar, the

extremities being of T-shape.

3. A buckle according to claim 1 or 2, in which the shoes are offset from the axis of the bar so as to maintain the latter partly within the opening of the frame.

4. A buckle according to claim 1, in which the guide member consists of a metal shell or stamping of a channel shape corresponding to the ends and one side of a rectangular buckle frame, the ends of the guide member being of angle-section with flanges fitting upon the ends of the frame, and other flanges spaced from the ends of the frame, these spaces forming parallel slots in which the shoes of the sliding bar are engaged.

5. A buckle according to claim 4, in which the middle portion of the guide member is of Z-section, the web being secured to one side of the frame, one flange projecting outwards for attachment of the buckle to a support, and the other flange being continuous with the free flanges of the end portions of the guide member.

6. A buckle according to claim 5, in which the continuous flange is inclined at an angle to the free flanges of the end portions, the shoes of the sliding bar being bevelled at a corresponding angle at one corner.

7. A buckle according to claim 1, in which the frame is of open rectangular shape, the ends and one side being drilled to receive rivets securing the guide member thereto, and the ends as well as the said side being sharp-cornered on their external faces to provide a firm seating for the guide member riveted to these faces.

8. A buckle according to claim 7, in which the external end faces of the frame are stepped to form shoulders fitting over the ends of the guide member flanges riveted to these faces.

Dated this 23rd day of August, 1946.

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[This Drawing is a reproduction of the Original on a reduced scale.]

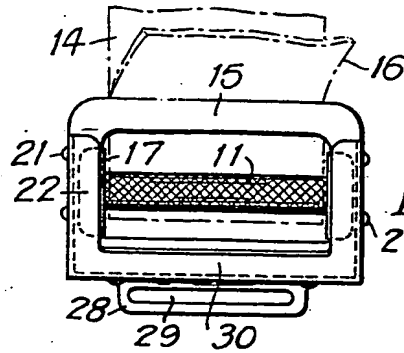


Fig. 1.

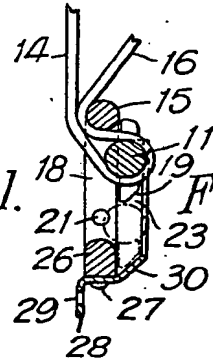


Fig. 2.

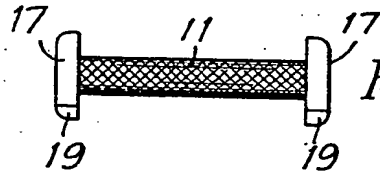


Fig. 3.

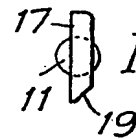


Fig. 5.

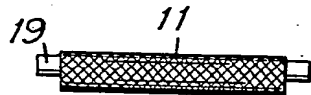


Fig. 4.

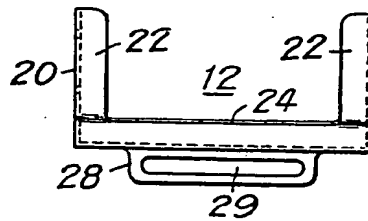


Fig. 6.

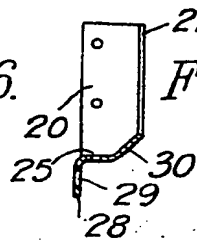


Fig. 8.

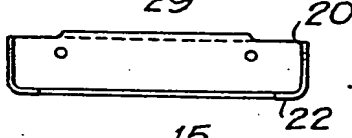


Fig. 7.

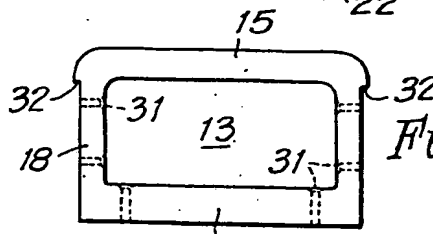


Fig. 9.

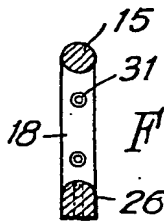


Fig. 10.

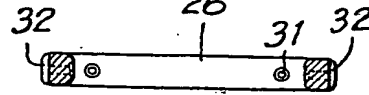


Fig. 11.